

Bull. Natn. Sci. Mus., Ser. A (Zool.), 5 (3), September 22, 1979

Occurrence of a New Alate Species of *Trechiamma* (Coleoptera, Trechinae) in Taiwan¹⁾

By

Shun-Ichi UENO

Department of Zoology, National Science Museum, Tokyo

In the collection of the National Science Museum (Nat. Hist.), Tokyo, there are a large number of specimens of trechine beetles belonging to the genus *Trechiamma*. Though not thoroughly studied yet, they appear to be classified into about sixty species. Some three-fourths of them are eyeless and the others are microphthalmic, but none of them are known to retain the hindwings. The majority of the hitherto known species occur in Honshu of the Japanese Islands and some in the central part of Hokkaido, whereas the genus is only poorly represented in Southwest Japan (cf. UENO, 1972, p. 250, 1975, p. 203). Thus, the occurrence of a new alate species of the genus on the high mountains of Taiwan, which is more than 1,000 km distant to the southwest from the southwestern tip of the Japanese mainland, is most unexpected and of immense interest from both the taxonomic and zoogeographic points of view.

This new species was discovered by Mr. Yasutoshi SHIBATA at T'ien-ch'ih on the southern part of the Chung-yang Mountain Range in the Island of Taiwan. It looks like a member of the group of *Trechiamma oreas* occurring in northeastern Honshu, but the elytra have square shoulders and cover the hindwings of normal shape and structure. They may not be functional since they are shortened to some extent, but must be similar to those possessed by the ancestral forms of *Trechiamma*. Apart from the presence of the hindwings, the Taiwanese species cannot be said to be less specialized than the oculate forms of the Japanese mainland. It is, however, archaic in its chaetotaxy, and is comparable in this respect with the groups of *T. oreas* and *T. yokoyamai*.

Zoogeographically, the discovery of the Taiwanese species is important in suggesting that the native place of *Trechiamma* must have been in the Chinese Continent. This can be surmised from an analysis of the distributional pattern shown by the Japanese trechines, but no direct proof of the conjecture has been obtained until now. *Trechiamma* and its relatives are abundantly represented in the cave fauna of Japan, but are completely absent in that of Korea. This means that the ancestors of the Japanese forms may have come directly from the Chinese Continent if it is their native place, not through the Korean Peninsula. The present discovery gave us a sounder basis to develop our speculation. If the original immigration from China to Japan

1) This study is supported in part by the Grant-in-aid for Scientific Research No. 434039 from the Ministry of Education, Japan.

was made by winged ancestors, it must have been realized without much difficulty when the East China Sea was narrower than it is at present. It is to be hoped that some day before long, *Trechiana* and its relatives will be found in China and will clarify the problem in an indisputable way.

The abbreviations used herein are the same as those explained in other papers of mine.

I wish herewith to express my deep appreciation to Mr. Yasutoshi SHIBATA, who kindly submitted to me for study all the trechine specimens collected by him on Taiwanese mountains including the type material of the present species.

Trechiana (s. str.) *alatus* S. UÉNO, sp. nov.

(Figs. 1–4)

Length: 5.60–5.80 mm (from apical margin of clypeus to apices of elytra).

Fairly large species of elongate body form, with long appendages; microphthalmic; inner wings present, apparently shortened, though nearly equal in length to elytra. Colour brown, somewhat reddish, shiny, and more or less iridescent, especially on elytra; palpi, scape and apical segments of antennae, ventral surface of hind body, and legs light reddish brown.

Head small, a little wider than long, and depressed above, with frontal furrows deep, entire, not angulate at middle, and rather widely divergent both in front and behind; frons and supraorbital areas gently convex, the latter being more or less wrinkled at the external sides; supraorbital pores close to each other, being situated on lines convergent posteriad; microsculpture distinct though fine, largely consisting of transverse reticulation (almost isodiametric on clypeus); eyes small, somewhat variable in size, gently convex and perfectly faceted; genae also gently convex and glabrous, always shorter than (usually about four-fifths as long as) eyes, and rather rapidly convergent towards deep neck constriction; neck fairly wide; labrum transverse, with the apical margin bisinuate because of the presence of distinct central tubercle; mandibles large and stout, though sharply hooked at apices; mentum free, with the tooth broad and deeply cleft at apex; submentum with a transverse row of six setae; palpi slender, with the penultimate segments gently dilated towards apices, apical segments subcylindrical though gradually tapering towards blunt tips; antennae long and thin, reaching apical three-tenths of elytra in ♂, one-third of elytra in ♀; antennal segment 2 about two-thirds as long as segment 3, which is slightly shorter than segment 4, segments 8–10 each cylindrical, about as long as segment 3 and fully four times as long as wide, terminal segment about as long as or very slightly longer than segment 4 or 5 but much narrower than scape.

Pronotum cordate, evidently wider than head, a little wider than long, widest at about two-thirds from base, and more rapidly contracted anteriorly than posteriorly; PW/HW 1.29–1.36 (M 1.31), PW/PL 1.13–1.18 (M 1.16), PW/PA 1.49–1.55 (M 1.53), PW/PB 1.42–1.46 (M 1.44); surface glabrous, rather depressed on the disc but moder-

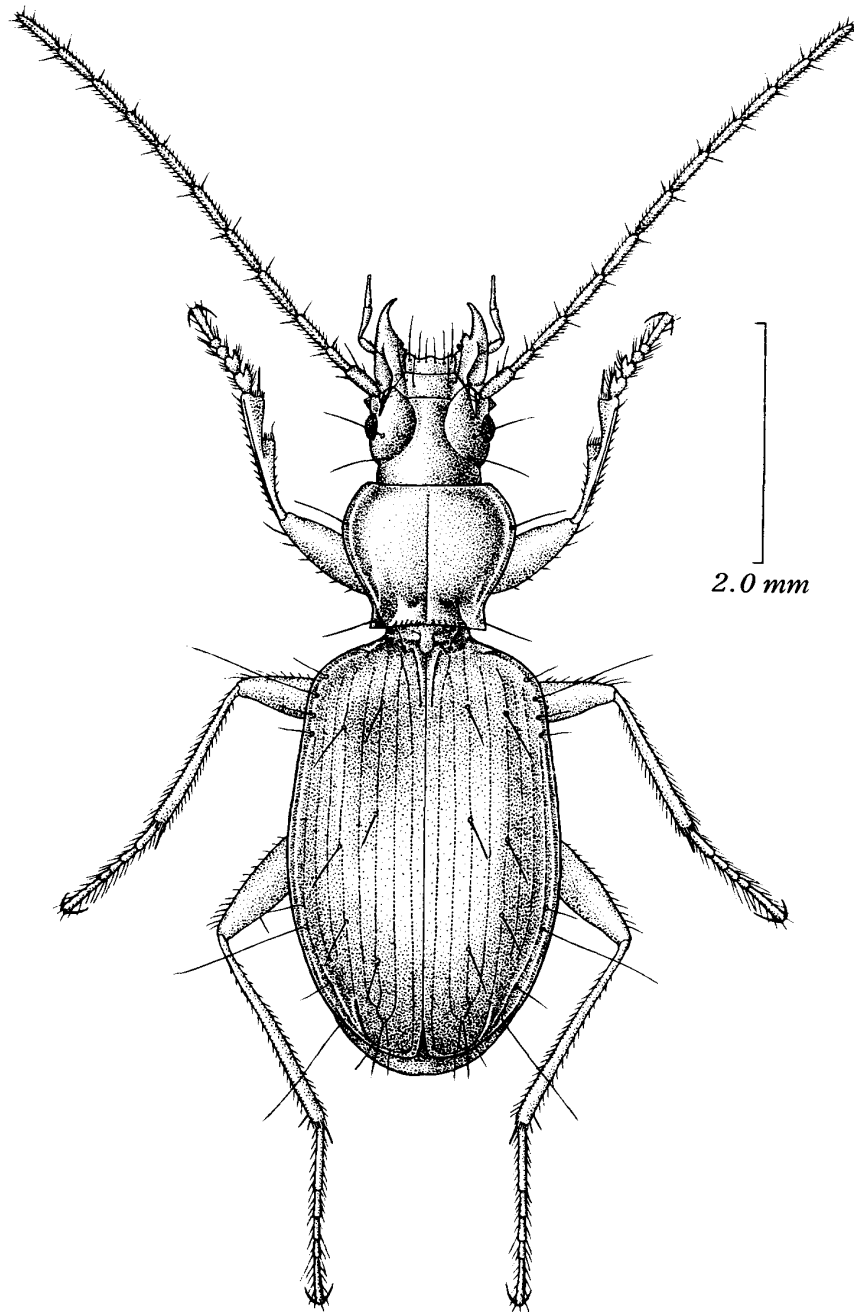


Fig. 1. *Trechiana* (s. str.) *alatus* S. UÉNO; sp. nov., ♂, from T'ien-ch'ih in Taiwan.

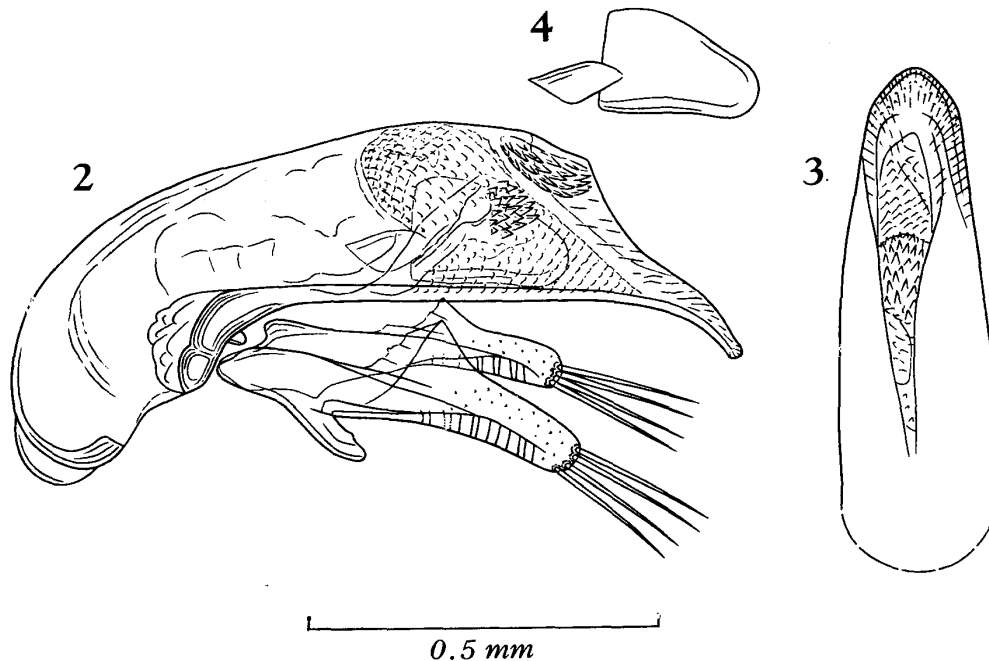
ately convex at the sides, with vague transverse striations; microsculpture composed of fine transverse lines though partially obliterated; sides rather widely bordered throughout, rather strongly rounded in front, less so behind middle, deeply sinuate at a level between one-sixth and one-fifth from base, and then slightly divergent again towards hind angles, which are more or less sharp; both lateral and postangular setae present, the latter being a little distant from the angle; apex slightly narrower than base

and almost straight, PB/PA 1.03–1.08 (M 1.06), with front angles rounded and only slightly produced; base slightly emarginate; median line deeply impressed on the disc and more or less widening basad; apical transverse impression either obsolete or very slight, basal one shallow, with a foveole on each side of median line, and laterally merging into basal foveae, which are fairly large, deep, more or less uneven at the bottoms, and extend anteriad; postangular carinae distinct though not very long; basal area narrow, longitudinally strigose.

Elytra oblong-ovate, much longer than wide, widest at about middle, and more regularly narrowed towards apices than towards bases; EW/PW 1.55–1.64 (M 1.59), EL/EW 1.57–1.63 (M 1.60); surface flat on the disc in basal half but moderately convex at the sides and in apical part; microsculpture not sharply impressed though consisting of fine transverse lines; shoulders distinct, square, with prehumeral borders nearly perpendicular to the mid-line at the innermost portions; sides moderately reflexed throughout, either straight or very slightly emarginate behind shoulders, feebly arcuate at middle, and then moderately rounded to apices through slight preapical emargination; apices forming a small re-entrant angle at suture, each roundly subangulate; striae entire, distinctly punctate, moderately impressed both on the disc and at the side, stria 8 similar in conformation to stria 7; scutellar striole long; apical striole rather short and feebly curved, joining stria 5; intervals flat; apical carina distinct though obtuse; stria 3 with three setiferous dorsal pores at $1/8-1/7$, $1/3-3/7$ and $5/7-3/4$ from base respectively, stria 5 also with three setiferous dorsal pores at $1/8-1/7$, $3/7-1/2$ and $3/5-2/3$ from base respectively; preapical pore situated at the apical anastomosis of striae 2 and 3, more distant from apex than from suture, and somewhat closer to apical striole than to suture; marginal umbilicate pores perfectly aggregated.

Ventral surface glabrous and smooth; each sternite usually with a pair of setae, but rarely with two pair of setae inserted one after the other; anal sternite with a pair of sexual setae in ♂, with two pair of them in ♀. Legs long and fairly slender, though the femora are rather stout; protibiae straight, deeply grooved on the external face and perfectly glabrous on the anterior face; tarsi fairly long, segment 4 with a long ventral apophysis in pro- and mesotarsi; in ♂, two proximal segments of each protarsus widely dilated, stoutly produced inwards at apices, and furnished beneath with adhesive appendages.

Male genital organ rather small, though robust and heavily sclerotized. Aedeagus short, three-tenths as long as elytra, not arcuate at middle, and moderately compressed, with large basal part gently curved ventrad; basal orifice small, with the sides only shallowly emarginate; sagittal aileron not large but distinct; apical lobe flat, curved ventrad, and blunt at the tip; viewed dorsally, apical lobe fairly wide and obtusely subtriangular at the distal part; ventral margin almost straight at middle in profile. Inner sac covered with poorly sclerotized scales and armed with a large copulatory piece on the right side and also with two patches of sclerotized teeth; copulatory piece lamellar, broad, rounded at apex, and bearing an accessory piece at the basal part; dorso-apical teeth-patch composed of heavily sclerotized teeth, which are



Figs. 2-4. Male genitalia of *Trechiana* (s. str.) *alatus* S. UÉNO, sp. nov., from T'ien-ch'ih in Taiwan; left lateral view (2), apical part of aedeagus, dorsal view (3), and separated copulatory piece, left lateral view (4).

partially fused together; the other teeth-patch lies on the left side just proximal to the dorso-apical one. Styles broad, left style being larger than the right, each provided with four setae at apex; in the holotype, the left style bears a fine additional seta besides the four ordinary ones.

Type-series. Holotype: ♂, allotype: ♀, paratypes: 1 ♂, 2 ♀♀, 1-VIII-1976, Y. SHIBATA leg. All deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Type-locality. T'ien-ch'ih, 2,200 m alt., ca. 6 km N of Mt. Kuan Shan on the southern part of the Chung-yang Mountain Range, in Kao-hsiung Hsien, Taiwan.

Notes. As the holotype of this new species is somewhat teneral, the description and illustrations of the male genitalia were prepared on the basis of those of the paratype, which is fully mature but partly damaged.

T'ien-ch'ih, the type-locality of the present species, is a small village lying at an elevation of about 2,200 m in the Lao-nung Ch'i drainage on the western side of the southern part of the Chung-yang Mountain Range. Its location is about 6 km north of Mt. Kuan Shan (3,666 m in height) and about 5.5 km west of Mt. Ch'i-t'ou Shan (3,240 m in height). In former times, it was very hard, if not impossible, to make collectings in that area because of the difficulty of access. However, the situation was much improved in 1972 by the construction of the new road, called Nan-pu Heng-kuan Kung-lu, which ran from T'ai-nan to T'ai-tung via Kuan-shan-ya-k'ou

(2,726 m above sea-level).

The type material of the trechine beetle was sifted out from a heap of dead leaves mingled with soil, which had been accumulated in a ditch at the side of that road. At this particular point, the forested slope above the ditch was wet being fed by a seepage, and furnished the hygrophilous trechine beetle with a favourable habitat. In view of the importance of his discovery, Mr. SHIBATA tried to visit the place again in the following years for obtaining some additional specimens of the trechine, but unfortunately failed to make his trip because of repeated breakdown of the road caused by stormy rains.

References

- JEANNEL, R., 1962. Les Trechini de l'Extrême-Orient. *Rev. fr. Ent.*, **29**: 171–207.
- UÉNO, S.-I., 1958 a. The cave trechids from the central part of the Chûgoku District, Japan. I. A new species of *Trechiamma* from the Taishaku limestone area. *Mem. Coll. Sci. Univ. Kyoto*, (B), **25**: 181–184.
- 1958 b. Ditto. II. The geographical races of *Trechiamma yokoyamai* S. UÉNO. *Ibid.*, **25**: 185–197.
- 1972. Occurrence of *Trechiamma* (Coleoptera, Trechinae) in northern Kyushu, Southwest Japan. *Annot. zool. Japon.*, **45**: 250–256.
- 1975. Two new *Trechiamma* (Coleoptera, Trechinae) from eastern Shikoku, Japan. *Bull. Natn. Sci. Mus., Tokyo*, (A), **1**: 203–212.